

CLAIMS

1. A semiconductor wafer inspection device comprising:
an optical illumination device that directs a light spot onto an inspection point on a surface of the semiconductor wafer;

a first optical sensor that, of scattered light from said inspection point, receives narrowly scattered light scattered with a scattering angle that is narrower than a prescribed angle and detects intensity of said narrowly scattered light;

a second optical sensor that, of scattered light from said inspection point, receives widely scattered light scattered with a scattering angle that is wider than a prescribed angle and detects intensity of said widely scattered light; and

a signal processing circuit that identifies the type of laser light scatterer present at said inspection point in response to a detection signal from said first and second optical sensors, wherein

said signal processing circuit comprises:

first calculation means that, if the intensity of said narrowly scattered light is within a prescribed sizing range, calculates a first PLS-based size from the intensity of said narrowly scattered light;

second calculation means that, if the intensity of said widely scattered light is within said sizing range, calculates a second PLS-based size from the intensity of said widely scattered light; and

identification means that, if the intensities of said narrowly scattered light and said widely scattered light are both within said sizing range, identifies the type of said laser light scatterer in accordance with both the first PLS-based size and said second PLS-based size.

2. The semiconductor wafer inspection device according to claim 1, wherein said identification means identifies a laser light scatterer present at said inspection point as being a particle, in a prescribed particle zone in which said first PLS-based size in said sizing range is either substantially equal to said second PLS-based size or is larger than said second PLS-based size, by a degree not more than a prescribed degree.

3. The semiconductor wafer inspection device according to claim 1, wherein said identification means identifies a laser light scatterer present at said inspection point as being a defect, in a prescribed defect zone in which said first PLS-based size in said sizing range is larger than said second PLS-based size, by a degree not less than said prescribed degree.

4. The semiconductor wafer inspection device according to claim 3, wherein said identification means identifies whether said defect is assumed to be a killer defect or not, in accordance with whether the first PLS-based size is larger or smaller than a prescribed size, in said prescribed defect zone.

5. The semiconductor wafer inspection device according to claim 1, wherein said identification means identifies a laser light scatterer present at said inspection point as being a defect that is assumed to be a killer defect if the intensity of said narrowly scattered light or said widely scattered light exceeds said sizing range.

6. A method of inspection of semiconductor wafers comprising:

- a step of directing a light spot onto an inspection point on a surface of the semiconductor wafer;

- a step of detecting intensity, of scattered light from said inspection point, of narrowly scattered light scattered with a scattering angle that is narrower than a prescribed angle;

- a step of detecting intensity, of scattered light from said inspection point, of widely scattered light scattered with a scattering angle that is wider than a prescribed angle;

a step of, if the intensity of said narrowly scattered light is within a prescribed sizing range, calculating a first PLS-based size from the intensity of said narrowly scattered light;

a step of, if the intensity of said widely scattered light is within said sizing range, calculating a second PLS-based size from the intensity of said widely scattered light; and

a step of, if the intensities of said narrowly scattered light and said widely scattered light are both within said sizing range, identifying the type of laser light scatterer present at said inspection point in accordance with both said first PLS-based size and said second PLS-based size.